

In Situ Biological Reduction of Martian Sample Collection Devices, Phase I

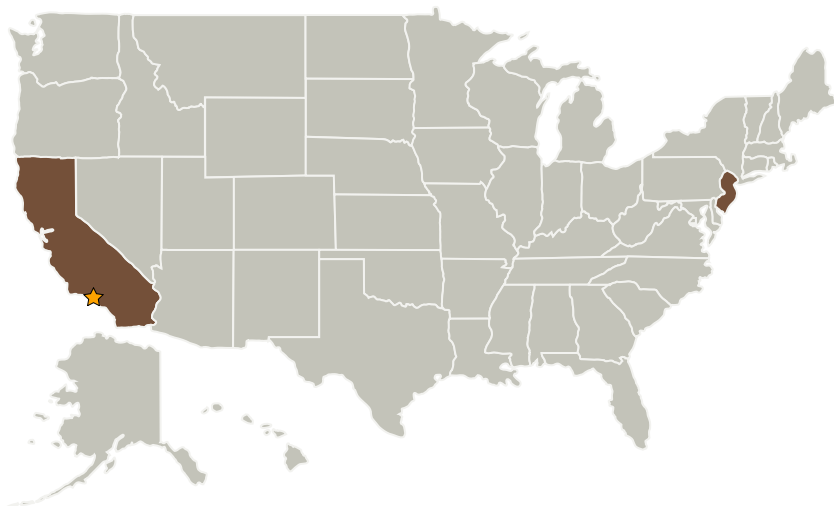
Completed Technology Project (2004 - 2004)



Project Introduction

Mars is a planet where life forms or their remnants may be found, all lander or probe missions to Mars must be cleaned and sterilized to the Category IV planetary protection requirements. Cross-contamination during sampling for in situ life-detection missions and sample turn missions remains a problem. It is desirable to develop a simple, portable sterilization device which would enable in situ cleaning and sterilization of collection devices when sampling on Mars. PlasmaSol Corporation (PlasmaSol) is a company dedicated to developing and commercializing atmospheric pressure plasma applications. The company consists of experienced physicists, chemists and engineers (see attached CVs) with an extensive expertise in plasma and plasma chemistry. We have recently developed a non-thermal atmospheric-plasma technology for cleaning and sterilizing spacecraft surfaces for NASA. We propose to configure our plasma technology for use in a Martian CO₂ atmosphere. This will require: (1) the redesign and optimization of the plasma unit, (2) confirming the cleaning and kill efficiency of the unit in a Martian atmosphere. If successful, this SBIR will develop a portable, effective solution to cross contamination.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
PlasmaSol LLC	Supporting Organization	Industry	Hoboken, New Jersey

Primary U.S. Work Locations

California	New Jersey
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Sergei B Babko-malyi

Technology Areas

Primary:

- TX07 Exploration Destination Systems
 - └ TX07.3 Mission Operations and Safety
 - └ TX07.3.5 Planetary Protection